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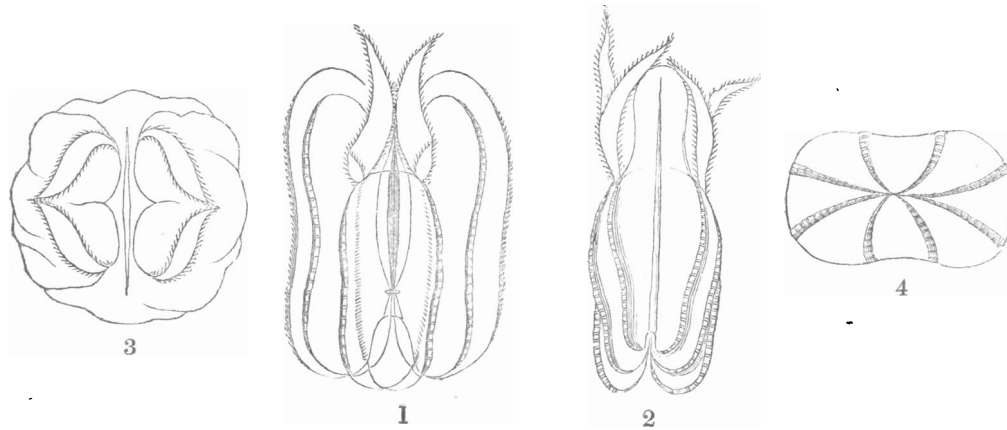
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VI. *On the Bolina Hibernica*. By ROBERT PATTERSON, Esq., *Member of the Natural History Society of Belfast*.

Read November 11, 1839.

IN a paper on the *Cydidippe pomiformis*, read before the Royal Irish Academy in December, 1838, and published in the present volume,\* the occurrence on our coast of another species of ciliograde was mentioned, its figure described, and some particulars respecting its economy brought forward. The present is intended as a sequel to the former communication respecting this animal, the *Bolina Hibernica*.

The specimens from an examination of which I am enabled to give the particulars here recorded, were obtained the 11th of July, 1839, when I was

EXPLANATION OF THE FIGURES.

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| Fig. 1. Front view. | 3. Anterior portion viewed from above.  |
| 2. Lateral view.    | 4. Posterior portion seen from beneath. |

\* *Ante*, page 91.

lodging at Bangor, county of Down ; and such was their abundance on that day, that in the course of twenty-five minutes, one hundred and twenty-six individuals were taken in the bay by means of two small canvass towing nets. On several occasions, both before and after that date, my efforts to obtain specimens were totally unsuccessful.

The general movement of the animal appears more deliberate, or less vivacious than that of the *Cydidippe pomiformis*, though always graceful and varied. The spiral motion on an axis, mentioned by Mertens as the mode of locomotion, may occasionally be seen, but is not habitual. Like *Cydidippe pomiformis*, it generally swims in an erect position, with the mouth upwards. Its increase of power does not seem proportionate to its increase of size, for a small medusa of the genus *Geryonia* of Cuvier, which chanced to be thrown into the glass, attached its peduncle to a *Bolina* from twelve to sixteen times its own bulk, and with great apparent ease towed it round the vessel, reminding the spectator of a pigmy steam tug towing a stately merchantman.

This species of beroe is extremely susceptible of injury, and hence, when any number are taken, some are sure to be found in a shattered state, perhaps, with so much as one-half of the body torn away. Any of the cilia detached from the body, along with a small piece of skin, will continue to vibrate for many hours ; this is particularly apparent in the four tentacula, and in the four ciliated rings or orifices, from which these organs are protruded. In both, we do not merely behold marginal cilia in rapid and continuous motion, but their number and variety of position is such, that the mutilated part to which they belong, is moved about with the briskness and activity which we are apt to regard as characteristic of a perfect and vigorous animal. Under each of the bands of cilia, two aqueous currents are easily discernible, one ascending, and one descending with great regularity.\*

The tentacula were formerly mentioned as “extremely beautiful in appearance, both from their transparency, and from the numerous minute, delicate, pointed cilia along their edges.” Their great attraction, however, is their versatility of form. They may be seen pointed, erect, and hollowed longitudi-

\* In a communication on *C. Pileus*, made by Mr. Garner, at the late meeting of the British Association, it was stated that such currents are occasioned by the action of minute internal cilia, placed on the parietes of the vessels.

nally like the ears of a horse, or somewhat funnel shaped, and occasionally either flattened or concave, with the extremity rounded. At times their position is horizontal, at others they hang "loosely down like the ears of a lap-dog, or are curved like the petals of the martagon lily."

A whitish cord-like body extends round the orifice of the mouth; another round each of the four apertures, whence the tentacula issue. From each of the longer bands of cilia, a similar cord of a whitish milky colour, extends over the lobes at the mouth, touches the one first mentioned, and is continued to the four orifices already noticed, one going to each.\* These orifices are connected in a similar manner with each, those on the same side of the body by a straight cord, those on opposite sides by an arched one, which adapts itself to the expansions or contractions of the body. The cords from all the bands converge near the anal extremity.

The two prominent lobes adjoining the mouth, and which sometimes constitute one-fifth of the entire length of the animal, are not permanent in their form, but vary not only in the regularity of their outline, but also in the extent to which they are distended, and at times, especially when the animal is in an exhausted state, become so reduced in size as to be scarcely perceptible.

During the time the drawings were in progress, specimens of the animal were kept in glass vessels of various dimensions, for the convenience of reference and examination, and one of these containing several individuals, was placed on the mantle piece, adjoining to some glasses filled with garden flowers. On looking at these through the transparent body of the *Bolina*, the flowers were seen so distinctly, that the several kinds were at once recognised, and the parts of fructification in some campanulate corollas, were with ease distinguished.

On taking a glass containing one of these beroes into a dark room, no luminosity was apparent, but on its being shaken, transient gleams of light were emitted. The animal was then taken and plunged in a glass of fresh water, which appeared instantaneously filled with innumerable small bright globules

\* The following passage in Jones's "Outline of the Animal Kingdom," occurs in treating of the Beroeform species of Ciliograde Acalephæ. "From both extremities of the digestive cavity, arise vascular vessels, one surrounding the oral, and the other the anal portions of the body: from these two rings eight double vessels arise, which run longitudinally from one pole to the other of the creature, beneath each of the cartilaginous ribs, upon which the cilia are placed."—p. 75.

of fire, all in motion and rapidly disappearing ; and on a light being brought, the *Bolina* was found lying lifeless at the bottom. In glasses containing a few individuals, flashes of light were given out, sufficient to render the figures on the dial plate of a watch visible for a moment, but too transient to allow the hour to be observed. Two large opaque vessels, each containing twenty or thirty individuals, were next subjected to examination in the dark cellar in which they had been placed. On agitating the first of these, light of a pale green tinge seemed instantly to diffuse itself through the water. On doing the same with the second, the whole contents of the vessel became lighted up so completely, as to render all the adjacent objects visible for a moment. On stirring it round, the animals were seen like lamps suspended in the water, to which their own radiancy imparted\* a milder and fainter effulgence. On touching them with the hand, light was invariably given out with increased brilliancy, the bands, and every portion of the cilia being distinctly exhibited, with a splendid greenish lustre as beautiful as it was evanescent. It was impossible to behold these bodies of innocuous fire, floating amid the brightness which they themselves diffused, and not feel, that to convey an adequate idea of their beauty, would be a task more fitted for the imagery of the poet, than the language of the naturalist.

Being obliged to leave Bangor early next morning, the sea water in one of the larger vessels was not changed during the day, and in consequence of this neglect, I found, on my return at night, that all its occupants had died. The water, owing to their decomposition, then presented a discoloured milky appearance, and emitted a peculiar and disagreeable odour. On being agitated in the dark, no light was given out, thus proving that the luminosity of the previous evening was peculiar to the living animal, and was not extended to the putrescence of its decaying parts. This species, and the *Beroë fulgens* of Macartney, taken by J. Templeton, Esq., on the Down coast, are the only Irish ciliogrades in which the luminous power has hitherto been observed.

Being desirous of ascertaining if the present species had been recognized in any other localities, I exhibited the accompanying figures at the late meeting

\* "Ils brillent pendant la nuit, comme autant de lumières suspendues, dans les eaux."—*Lamarck*.

of the British Association in Birmingham, and solicited information on the subject. It was unknown to any of the naturalists then present; and my friend Edward Forbes, Esq., who communicated a valuable paper "on the Ciliogrades of the British Seas," pronounced it to be distinct from any of the eight species enumerated by him.

As it does not appear to have been previously recorded, either by British or Continental writers, the specific name *Hibernica*, before applied provisionally, may now be regarded as permanent. It would be premature to say the same of its generic title; for although it agrees with the *Bolina* of Mertens more nearly than with any other at present defined or figured, we recognise in the diminished size of the lobes, and in the more extended portion of the longer bands occupied by cilia, a still nearer approach to the true *beroes*; so that it is possible when we attain a more extended knowledge of the various species of ciliogrades, the present may be referred to an intermediate genus, yet to be established, or ranked with some of those now existing, under one common and comprehensive appellation.

The localities in which it has hitherto been observed are, Larne Lough, county of Antrim, (R. Patterson); Bangor Bay, (R. Patterson); Strangford Lough, county of Down, (W. Thompson); Lambay Island, county of Dublin, (R. Ball, and W. Thompson); and Youghal Harbour, county of Cork, (R. Ball).

The present species is not likely to be confounded with either of its two congeners,—*B. elegans*, of a pink colour, found in the South Sea, or *B. septentrionalis*, clear bluish, taken in Beering's Straits. The following brief specific description may suffice to distinguish it from other British ciliogrades.

*Bolina Hibernica*. Form variable, generally ovate, rounded, and compressed. Hyaline, lobes contractile, and not more than one-fifth of the entire length of the animal. Longer bands, ciliated nearly to their apex.

For the accurate figures by which the present paper is illustrated, I am indebted to the skill and kindness of Miss Masson of Bangor. A much greater number would, however, be requisite to convey an adequate idea of the diversified aspect of the animal, especially with regard to the inflated appearance occasionally presented by the upper portion of the body.